

Remains of European Wasps *Vespula germanica* detected in pellets of Pied Currawong *Strepera graculina*

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Abstract. This observation of two regurgitated pellets deposited by Pied Currawongs *Strepera graculina*, in Tawonga, north-eastern Victoria, indicates targeted predation on the invasive European Wasp *Vespula germanica*.

Introduction

Occupying a range of habitats along eastern Australia, the Pied Currawong *Strepera graculina* has a generalist diet consisting of invertebrates, including insects, carrion and berries (Prawiradilga 1996; Rose 1999; Fulton & Ford 2001; Debus & Rose 2005). Stomach and pellet contents of Pied Currawongs include stinging, aggressive and/or toxin-producing insects, including wasps and bull-ants (e.g. Red Bull Ant *Myrmecia gulosa*, Jumper Ant *M. nigrocincta* and *M. tarsata*) (Prawiradilga 1996; Rose 1999; Fulton & Ford 2001; Debus & Rose 2005; Higgins *et al.* 2006). Studies of this species' diet have identified predation on eight families of Hymenoptera: Formicidae, Inchneumonidae, Mutillidae, Pergidae, Pompilidae, Vespidae, Braconidae and Tiphiidae (Prawiradilga 1996; Wood 1998; Rose 1999; Fulton & Ford 2001; Debus & Rose 2005). In the family Vespidae, there are numerous native and exotic species within Australia (Lester & Beggs 2019) but the introduced European Wasp *Vespula germanica* has not been recorded as a prey item of the Pied Currawong (Higgins *et al.* 2006) although this wasp has been recorded on the Australian mainland since 1977 and earlier in Tasmania (Spradbery & Maywald 1992). The European Wasp is a declared pest that is harmful to people and damaging to horticultural and agricultural industries in Australia (DPIRD 2020).

Study area and methods

The observations were made at a residential property in Tawonga (−36.7009 S, 147.1399 E), ~230 km north of Melbourne in north-eastern Victoria. The site is at the edge of a sclerophyll forest ~400 m above sea level. Observations occurred near a shallow ceramic water-dish (diameter 30 cm, depth <4 cm) that was positioned ~1 m above ground on a cut stump.

On 27 April 2020, two Pied Currawongs were perched at the water-dish and shortly after their departure a freshly deposited regurgitated pellet (~4 cm long) was seen on the stump next to the dish. This pellet was collected for further examination as it appeared to contain mostly remains of European Wasps. No live wasps were seen at the water-dish nor flying in the vicinity. The pellet was air-dried on an open dish, dissected with tweezers, and its contents photographed after being categorised by wasp body part. Another pellet, similar in size and also containing remains of European Wasps, was found on the same stump on 2 May 2020 but no Currawongs were observed before this

pellet was found. Pellet contents were identified to species based on the shape and markings of body parts using diagnostic images and notes for identification of European Wasps (Walker 2007).

Results and discussion

The dissected pellet sample was dominated by parts of European Wasps (Figure 1a) and contained a minimum of 22 individuals, based on the number of wasp heads identified (Figure 1b). Along with the 22 heads, there were 21 large thorax/abdomen segments, >45 smaller thorax/abdomen segments, 30 legs, 42 separate wings and six separate antennae of European Wasps. Also in the pellet were eight parts that appeared likely to be hind-leg femurs of orthopterans and some vegetable matter. The second pellet, collected on 2 May, also contained the remains of European Wasps (Figure 1c).

A review of published research has not identified previous observations of Pied Currawongs feeding on European Wasps, but did identify predation on wasps within the same family (Prawiradilga 1996). Given that the two pellets consisted primarily of European Wasp remains, this wasp species was probably the target prey item and, from their high proportion in the pellets, this suggests that these were taken at or near a wasp nest. Pied Currawongs have previously been observed taking native bees; the Currawongs ran along the ground to chase and take individuals from a swarm (J.M. Peter in Higgins *et al.* 2006). That observation parallels other documented accounts of this species taking insects that use aggressive defence mechanisms such as stinging involving toxic chemicals (Prawiradilga 1996). Drinking of water has been observed before or after regurgitation of pellets elsewhere (Wood 2000), suggesting that the water in the water-dish on the stump assisted regurgitation of the two pellets at the same location.

This observation further enhances understanding of the food types consumed by Pied Currawongs (e.g. as summarised by Higgins *et al.* 2006). European Wasps as a component of the diet of native birds may become increasingly relevant as this invasive wasp continues to expand its distribution across Australia (Spradbery & Maywald 1992). Further research is needed on whether wasp control methods, especially the use of pesticides, may directly impact on bird health or have bioaccumulation effects if large quantities of poisoned wasps are consumed.

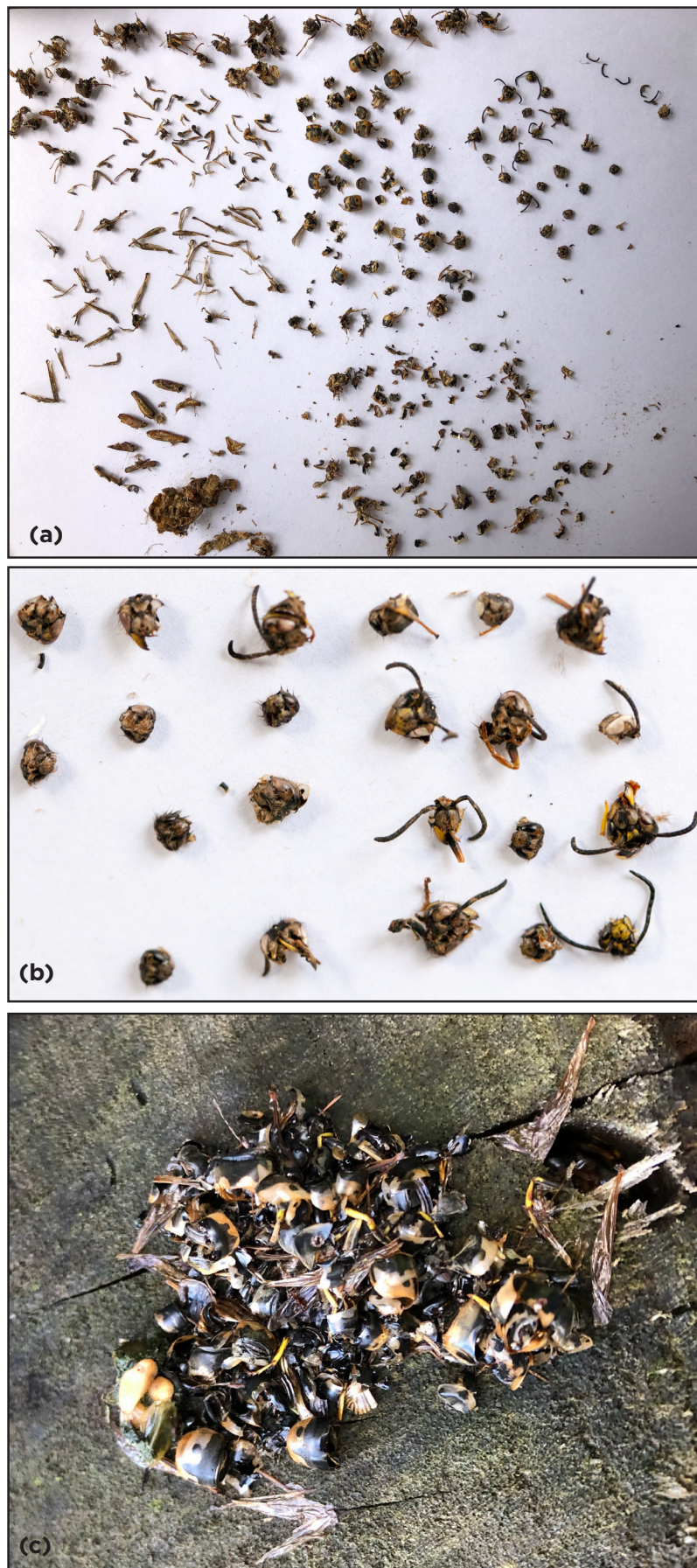


Figure 1. Contents of two regurgitated Pied Currawong pellets containing remains of European Wasps, Tawonga, north-eastern Victoria: (a) all dissected contents of one pellet, found on 27 April 2020, (b) detail of wasp heads used to identify number of individual wasps from this pellet, and (c) another pellet, found on 2 May 2020, broken open to enable examination of contents.

Acknowledgements

Comments by J. Fitzsimons, G. Fulton and K.A. Wood significantly improved the manuscript.

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Received 20 September 2020, accepted 13 December 2020,
published online 29 April 2021